

**IN THE UNITED STATES PATENT  
AND TRADEMARK OFFICE**

Inventor: **William Arias**

***TOOL TO REPLACE MOTORCYCLE BRAKE PADS***

**SANCHELIMA & ASSOCIATES, P.A.**

Jesus Sanchelima, Esq.,

Reg. No. 28,755

Attorneys for Applicant

235 S.W. Le Jeune Road

Miami, Florida 33134

Tel: (305) 447-1617

Fax: (305) 445-8484

1           **I. TITLE: " TOOL TO REPLACE MOTORCYCLE BRAKE PADS "**

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3           **II. BACKGROUND OF THE INVENTION**

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5           **1. Field of the Invention.**

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7           The present invention relates to tools, and more particularly, to tools  
8 used to facilitate the replacement of brake pads.

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10          **2. Description of the Related Art.**

11

12          Many designs for tools have been designed in the past. None of  
13 them, however, include curved elongated substantially flat members  
14 having wedged ends that mount onto discs of wheel assemblies, such as  
15 motorcycle wheel assemblies, for the replacement of brake pads.

16

17          Applicant believes that the closest reference corresponds to U.S.  
18 Patent No. 4,809,567 issued to Bongard for Disc brake tool and kit.  
19 However, it differs from the present invention because Bongard teaches a  
20 disc brake tool and kit that is used for back seating disc brake pistons into  
21 the bores after old brake pads have been removed to make room for new  
22 brake pads. The disc brake tool includes a driven jaw with a first bearing  
23 surface and gudgeon socket, a driving jaw with second bearing surface and  
24 a centrally located threaded hole, and a threaded bolt which screws into  
25 the centrally located threaded hole and seats within the gudgeon socket to  
26 maintain the two bearing surface in parallel relation to each other. Turning  
27 the threaded bolt in one direction causes the bearing surfaces on the jaws to  
28 move away from each other thereby driving the disc brake piston back into

1 its bore. Rotating the threaded bolt in the other direction loosens the jaws  
2 and bolts so that they can be removed from within the caliper of the disc  
3 brake. The kit further includes a U-shaped clip, which may be placed over  
4 the jaws, which are joined to form a compact container in which the  
5 threaded bolt is received for easy storage.

6  
7 Applicant believes that another reference corresponds to U. S. Patent  
8 No. 5,269,053 issued to Hicks for Compact disc brake piston retraction tool  
9 and method for retracting disc brake piston. However, it differs from the  
10 present invention because Hicks teaches a compact disc brake piston  
11 retraction tool and method for retracting a disc brake piston for moving a  
12 disc brake piston into a retracted position in the cylinder position in the  
13 cylinder bore of a disc brake caliper in order to allow the replacement of  
14 worn disc brake pads. The tool includes a threaded bolt, and a threaded  
15 collar. The bolt-collar assembly can operate alone or be attached to a brace  
16 support wall to enable it to be braced against the caliper arms, opposite the  
17 brake piston. This allows pressure to be exerted on the disc brake piston  
18 by the rotation of the collar around the threaded bolt, thereby causing the  
19 bolt-collar assembly to lengthen and exert pressure against the disc brake  
20 piston by a variety of means such as directly, by a piston bearing plate, or a  
21 brake pad attached to the brake piston. It can use a brace support wall or  
22 omit it and, can either use a piston bearing plate and/or collar journal  
23 collar end cap to transfer the pressure to the disc brake piston to force the  
24 piston back into the cylinder bore. Methods of using it are also provided.

25  
26 Other patents describing the closest subject matter provide for a  
27 number of more or less complicated features that fail to solve the problem

1 in an efficient and economical way. None of these patents suggest the  
2 novel features of the present invention.

### 3 4 **III. SUMMARY OF THE INVENTION**

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6 A tool to replace vehicle brake pads, comprising a pair of curved  
7 elongated substantially flat members each wedged at one end with  
8 securing means to secure to one another when mounted onto each side of a  
9 wheel assembly. The wheel assembly has a plurality of first through-holes  
10 and the pair of curved elongated substantially flat members are used to  
11 cammingly displace disc brake pistons into their respective bores to make  
12 room for replacement of old brake pads with new brake pads.

13  
14 The securing means includes the pair of curved elongated  
15 substantially flat members each having a plurality of second through-holes  
16 that align with the first through-holes and a securing device attaching  
17 through the first through-holes and second-through-holes. The pair of  
18 curved elongated substantially flat members each has first and second faces  
19 and first and second ends. The first faces are substantially flush and face  
20 the each side of the wheel assembly when mounted upon. Each of the  
21 second faces has a wedge section extending a predetermined distance from  
22 the first ends towards the second ends without reaching the second ends.

23  
24 The pair of curved elongated substantially flat members are mounted  
25 onto the wheel assembly and the wheel assembly is rotated so that the  
26 wedge section slides in between the disc brake pistons and the wheel  
27 assembly to cammingly displace the disc brake pistons into their respective  
28 bores with the second faces.

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The wheel assembly is of an automobile, motorcycle, truck, tractor, or trailer, or other vehicle having a similar braking system. The wheel assembly may be a disc.

It is therefore one of the main objects of the present invention to provide a tool to replace motorcycle brake pads for back seating disc brake pistons into their bores without having to remove the front or rear wheel assembly.

It is another object of this invention to provide a tool to replace motorcycle brake pads that mounts onto the disc of a motorcycle wheel assembly.

It is another object of this invention to provide a tool to replace motorcycle brake pads without bending or warping front or rear wheel assemblies.

It is another object of the present invention to provide a tool to replace motorcycle brake pads that comprises a pair of curved elongated substantially flat members wedged at one end that mount onto either side of wheel assembly discs.

It is still another object of the present invention to provide a tool to replace motorcycle brake pads that slide in between disc brake pistons and the motorcycle disc, forcing the disc brake pistons into their bores.

1       It is still another object of the present invention to provide a tool to  
2 replace motorcycle brake pads without having to bleed the vehicle's brake  
3 line system.

4  
5       It is yet another object of this invention to provide such a device that  
6 is inexpensive to manufacture and maintain while retaining its  
7 effectiveness.

8  
9       Further objects of the invention will be brought out in the following  
10 part of the specification, wherein detailed description is for the purpose of  
11 fully disclosing the invention without placing limitations thereon.

#### 12 13       **IV. BRIEF DESCRIPTION OF THE DRAWINGS**

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15       With the above and other related objects in view, the invention  
16 consists in the details of construction and combination of parts as will be  
17 more fully understood from the following description, when read in  
18 conjunction with the accompanying drawings in which:

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20       **Figure 1** represents a perspective view of the present invention.

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22       **Figure 2** shows a top view of the instant invention mounted onto the  
23 disc of a wheel assembly and back seating disc brake pistons into their  
24 bores.

25  
26       **Figure 3** illustrates a left side view of the instant invention mounted  
27 onto a motorcycle disc.

1        **Figure 4** is a representation of the instant invention having back  
2        seated the disc brake pistons into their bores after wheel assembly **100** has  
3        rotated in a counter-clockwise direction from the position seen in Figure 3,  
4        forcing the instant invention to slide in between the disc brake pads **116**  
5        and the motorcycle disc **104**.

## 7        **V. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

9        Referring now to the drawings, where the present invention is  
10       generally referred to with numeral **10**, it can be observed that it basically  
11       includes right elongated member **20** and left elongated member **20'**. Right  
12       elongated member **20** is a mirror image of left elongated member **20'**. Right  
13       elongated member **20** is mounted onto the right face of a wheel assembly  
14       disc and left elongated member **20'** is mounted onto the left face of the  
15       wheel assembly disc. In the preferred embodiment, the wheel assembly is  
16       of a "Harley Davidson" motorcycle. However, the motorcycle may be any  
17       vehicle so long as the vehicle rim/disc has holes, such as holes **114** seen in  
18       figures 3 and 4, for the instant invention to mount upon.

20       As seen in figure 1, right elongated member **20** and left elongated  
21       member **20'** have cooperative characteristics to mount and be secured upon  
22       vehicle discs. Right elongated member **20** and left elongated member **20'**  
23       are substantially flat; having plateaued section **22** that extends from end **28**  
24       to ridge **24**. Extending from ridge **24** is wedge **26** that terminates at edge  
25       **30**. Holes **32** are through-holes traspasing right elongated member **20** and  
26       left elongated member **20'**.

1       As seen in figure 2, right elongated member **20** and left elongated  
2 member **20'** are mounted and secured upon disc **104** of wheel assembly  
3 **100**, seen in figures 3 and 4. In the preferred embodiment, right elongated  
4 member **20** and left elongated member **20'** are bolted to each other with  
5 disc **104** in between them, as shown in the illustrated figure. When  
6 mounted and secured upon disc **104**, holes **32** of right elongated member **20**  
7 and left elongated member **20'** align with holes **114**. Flush section **34** faces  
8 each face of disc **104** and in the preferred embodiment, the gap between  
9 each flush section **34** and disc **104** is as small as possible. Wing bolts **36** and  
10 nuts **38** may be utilized as a securing device to attach right elongated  
11 member **20** and left elongated member **20'** to each other with disc **104** in  
12 between.

13  
14       As seen in the illustrated embodiment, brake caliper **108** comprises  
15 pistons **116** and their respected bores **118**. As shown, wedges **26** cause  
16 pistons **116** to back seat into their respective bores **118** as right elongated  
17 member **20** and left elongated member **20'** pass between disc **104** and  
18 pistons **116**. Once pistons **116** are set back into their respective bores **118**,  
19 there is room for the replacement of the old brake pads, not seen. Also  
20 seen in figure 2, are holes **122** to receive brake pins **120**.

21  
22       Seen in figure 3 is a motorcycle wheel assembly and strut. Wheel  
23 assembly **100** comprises tire **102** mounted onto rim **105**. Disc **104** is secured  
24 onto rim **105** and is mounted onto strut **106** by pin **112**. Also secured to  
25 strut **106** is brake caliper **108**. Brake caliper **108** is attached onto strut **106**  
26 with end nuts **110**. As seen in this illustration, left elongated member **20'** is  
27 secured onto the left face of disc **104**, not shown is right elongated member  
28 **20** secured onto the right face of disc **104**. In the preferred embodiment,



1 both left elongated member 20' and right elongated member 20 are secured  
2 onto disc 104. This ensures that equal force will be applied to pistons 116  
3 when wedge 26 is forced against them. The instant invention, as seen in  
4 the illustrated figure, has been mounted and secured upon disc 104, and is  
5 in position to be utilized.

6  
7 As seen in figure 4, wheel assembly 100 has been rotated in a counter-  
8 clockwise direction forcing instant invention 10 within brake caliper 108,  
9 thus forcing pistons 116 to back seat into their respective bores 118, as seen  
10 in figure 2. Once pistons 116 are set back into their respective bores 118  
11 there is room for the replacement of the old brake pads, not seen.

12  
13 In operation, left elongated member 20' is secured onto the left face of  
14 disc 104 and right elongated member 20 is secured onto the right face of  
15 disc 104, only the left side is seen in figures 3 and 4. Brake pins 120 are  
16 removed from brake calipers 108. The removal of brake pins 120 will  
17 sometimes cause brake pads, not seen, to slide or fall out completely of  
18 brake caliper 108.

19  
20 In the preferred embodiment, wheel assembly 100 is rotated in a  
21 counter-clockwise direction so that edge 30 meets pistons 116 in brake  
22 caliper 108, seen in figure 2. Instant invention 10 will cause the brake pads,  
23 not seen, to slide completely from brake caliper 108, as wheel assembly 100  
24 rotates, in the event they had not slid or fallen out when brake pins 120  
25 were previously removed. Wheel assembly 100 continues to be rotated  
26 until nut 38 or wing bolt 36 approaches brake caliper 108 as seen in figure  
27 4. With the length of plateaued sections 22, it is clear to see that wedge 26  
28 has cleared the length of brake caliper 108. In the illustrated position,

1   plateaued sections **22** have forced pistons **116** to sit back into their  
2   respective bores **118**, as seen in figure 2. Once in the illustrated position,  
3   wheel assembly **100** is rotated in a clockwise direction, clearing the area for  
4   the installation of new brake pads, not seen.

5  
6         In the preferred embodiment, left elongated member **20'** and right  
7   elongated member **20** are approximately 0.317 inches in thickness from  
8   plateaued section **22** to flush section **34**. However, thickness of left  
9   elongated member **20'** and right elongated member **20** may vary according  
10  to brake pad thickness and brake caliper tolerances. In some cases left  
11  elongated member **20'** and right elongated member **20** thickness may range  
12  from 0.001 to 10.0 inches and even more, depending on the equipment it is  
13  used for, such as but not limited to, automobiles, buses, tractors, and other  
14  vehicles having similar brake pad systems. Left elongated member **20'** and  
15  right elongated member **20** can also vary in length, depending on the  
16  number of pistons in the brake caliper.

17  
18         In addition, the instant invention typically applies even pressure on  
19  each side of the wheel assembly disc, since instant invention **10** mounts on  
20  each side of the wheel assembly disc, preventing bending or warping of the  
21  wheel assembly disc.

22  
23         The instant invention may be utilized to safely replace old vehicle  
24  brake pads without opening the brake line system. Therefore, it is not  
25  necessary to bleed the brake line system. Furthermore, the instant  
26  invention may be used to replace brake pads on front or rear wheel  
27  assemblies.

1       The foregoing description conveys the best understanding of the  
2 objectives and advantages of the present invention. Different embodiments  
3 may be made of the inventive concept of this invention. It is to be  
4 understood that all matter disclosed herein is to be interpreted merely as  
5 illustrative, and not in a limiting sense.